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PROPOSED PLAN TO IMPROVE CALLS DROPPING

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ABSTRACT:
Femtocells and picocells are getting to be well known in the media transmission industry keeping in mind the end goal to give high information rate correspondence with superlative nature of administration. The idea of separating an expansive cell into various little cells is to lessen the blocking and dropping of brings in a phone arrange. Incorporating femtocell and macrocell will be the medium of exchanging a huge volume of calls from the macrocell to the femtocells by method for effective taking care of. Various leveled Cellular Networks (HCN) offer an enhanced use of the inside systems by allotting the high and low speed clients to the picocell and femtocells separately. In this paper, we display a coordinated system and talk about the real issues of portability administration. We propose a Call Admission Control (CAC) plot with advanced SINR in the femtocellular/macro cellular organize which successfully handles different calls. We additionally propose a M/M/C Markov show for the two layers of HCN with a FIFO line. Both of these plans brings down the call dropping likelihood and the contrasts between them are likewise watched. Our proposed plans will be extremely important for the general population working in this kind of research and industry to execute.
KEYWORDS: Heterogeneous system, Call Admission Con-troll, Hierarchical Cellular Network

I. INTRODUCTION

The quantity of cell phone clients are ascending at an exponential rate as of late particularly in the creating nations. In addition, the cell phone clients have extreme enthusiasm for high voice administrations and other information devouring administrations yet at a less expensive cost. Be that as it may, giving these requests has gotten to be troublesome for all cell phone administrators around the globe. So as to meet the requests of the clients and in addition the portable administrators, analysts concocted a thought of another little base station known as femtocells. It utilizes the administrations of the current broadband association with interface with the administrator center system and resembles a DSL, switch or link modem. It utilizes an indoor remote system to associate with the cell phones. Ordinarily, a femtocell normally underpins two to four dynamic cell phones in a private setting. Also, it can bolster 8 to 16 dynamic cell phones in big business settings. A femtocell permits benefit suppliers to amplify benefit scope inside or at the cell edge, particularly where get to would some way or another be restricted or inaccessible. For instance, utilization of femtocells in storm cellars (or in spots having thick dividers) will be exceptionally useful. Picocell has likewise been an imperative part in enhancing remote system limit and cell scope. These base stations will make cellsof littler range alluded to as picocells, bringing about high limit and better scope in these regions [1]. In cell systems, picocells are regularly used to stretch out scope to indoor territories where outside signs don't achieve well, or to include arrange limit in ranges with extremely thick telephone utilization, for example, prepare stations or stadiums. Picocells give scope and limit in regions troublesome or costly to achieve utilizing the more customary macrocell approach.

Femtocell is helpful for stationary clients yet it gets to be troublesome with regards to moving clients since it has a little yet thought scope region accessible. Clients who run over those scope regions (particularly the low speed clients) will be sufficiently qualified to enter and utilize the femtocell allocated for that range. They will remain associated unless they are moving again or discover another source with better asset for association. Then again, picocell is discovered helpful to handle the clients with high versatility. So if critical

numbers of femtocells are presented in a system where picocell and macrocell were at that point sent, the low and rapid clients will be sub-stantially profited while obtaining an enhanced association. The entire reconciliation will thusly diminish the dropping and blocking likelihood of handover calls.

II. RELATED WORK

There are numerous researches about how femtocells could be deployed in a macrocell to reduce the handover call dropping and blocking probability [2]. The solution for successful femtocell/macrocell integration is a neighbor cell list with a least number of femtocells, the efficient handling of handover calls, effective call admission control (CAC) and handover processes with proper signaling. In [3] a Markov model for two tier cellular designs has been designed by Salih, T. et al. including FIFO queue in the macrocell. In the proposed model, queue time and the mobility of the users are also taken into account. The results obtained from the analytical model of the current cellular system provide a better performance than the previous models. In [4] a two-layer cellular architecture is presented to reduce the handover call dropping probability with high speed mobile terminals. Parwani. K, et al. proposes performance measurement in mobile communication networks with hierarchical cellular networks [5]. Here the paper presents the comprehensive performance analysis of the two low layer (femtocell and picocell) hierarchical cellular networks using the fluid flow mobility model.

The rest of the paper is organized as follows: Section III describes the system model. Section IV describes our pro-posed model.

III. SYSTEM MODEL

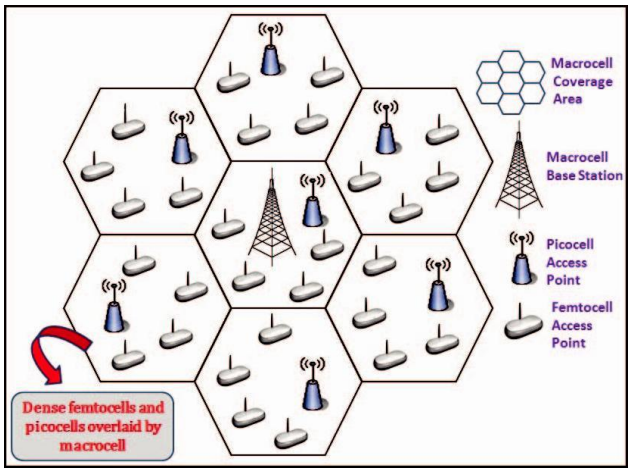


Fig. 1: Macrocell/picocell/femtocell overlaid network

By using the centralized Radio Network Controller (RNC), the existing macrocellular networks control their associated macro base stations (BSs). Normally, One RNC is in charge of radio resource management of approximately hundred macro BSs. There has been deployment of femtocells either within a macrocell coverage area or within a separate zone. The modern change in the network structure (the introduction of femtocells in a macrocell network) is mainly for the purpose of data offloading and serving the cell edge users with a better data quality. This change is known as Heterogeneous network or the HETNET as illustrated in Fig. 1.

In a dense heterogeneous network deployment, there are numerous femtocells deployed within a macrocell network. This deployment provides a lot of benefits to the almost stationary or slow moving mobile users. Fig. 3 represents a Markov chain for the queuing analysis of a femtocell layer in CAC scheme, where the

states of the system represent the number of calls in the system. The handover priority scheme is ignored for the femtocellular network as there is a high data rate and low call arrival rate in a femtocellular network. There are three types of calls arriving in a femtocell: new originating calls, macrocell-to-femtocell handover calls and femtocell-to-femtocell handover calls. Calls require a level of signal strength which is easily accepted by any Femtocell/Picocell Access Point (FAP/PAP) and allows connection without any issues. The CAC scheme in macrocell and femtocell integration has some mobilityissues. The idea of three layers of hierarchical network takes into account of the mobility issues. In mobility management, two types of users are introduced: low speed users and high speed users. The effective mobility management gives better handling of the mobile users.

IV. PROPOSED MODEL

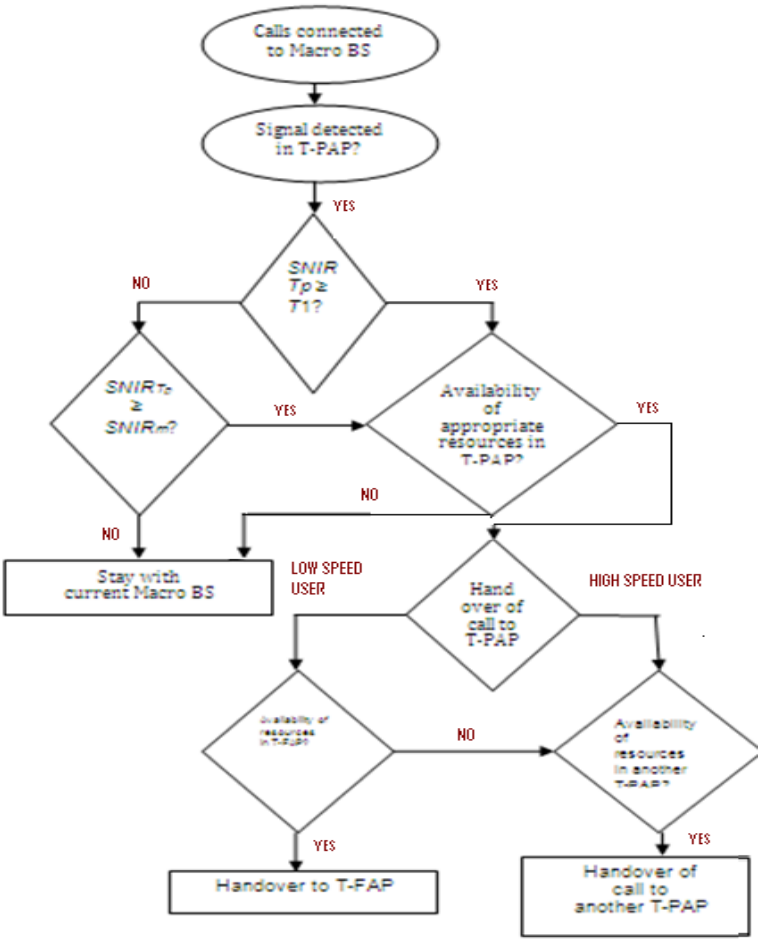
CAC (Call Admission Control) assumes a critical part by controlling the confirmation of different movement calls inside the macrocell scope range effectively. It additionally permits macrocell system to use their assets adequately. Macrocell is normally swarmed with movement; at times this activity can without much of a stretch be taken care of however here and there macrocell alone can no longer oblige such majority of traffics. We connected this plan just for macrocell-femtocell coordination, yet for presence of picocell in macrocellular organize while femtocell are as of now present, we can't simply utilize CAC.

Our current proposed conspires presents HCN (Hierarchical Cellular Network) with FIFO (First in First Out) as the lining framework. In our proposed plot, we have broken down the elements of picocell nearly while incorporating every one of its perspectives with the femtocell in a macrocell organizes. Two low layers of HCN (Hierarchical Cellular Networks) with a FIFO line are utilized to make the mix more legitimate. This proposed model is considered for a small region.

Femtocells are doled out with low speed clients and picocells are appointed with fast clients. Picocell has higher sweep than femtocell. One picocell covers around 7 femtocells. On the off chance that a free divert is not accessible in the chose cell, the handoff call is blocked. The call is additionally blocked if the line is full and the line time is too short for the relegated client. Because of the inaccessibility of free directs in the wanted cell, the new calls which were hindered before will be flooded to the picocell.

In the event that low speed client calls are flooded to the picocell, those calls are forever changed into rapid client calls. When this procedure happens, those changed gets back to can't come back to the femtocells (or change back to low speed client calls). This change just happens when low speed clients turn out to be fast clients furthermore because of the inaccessibility of free direct in femtocell.

In our proposed plot, exchanging an expansive lump of macrocell calls to the femtocell system is our principle objective. This will make the macrocellular organize lighter and different open doors will be accessible for the macrocellular arrange clients. We have partitioned our proposed CAC into three sections. The initial segment is for the calls that are recently begun. The second part is for the calls that are as of now associated with macrocellular BS and the third part is for the calls that are as of now associated with the



FAP/PAP (Femtocell/Pico cell Access Point).

Fig. 2: Algorithm for calls connected to macro cell

In our proposed plot, we have presented a limit level (T1) of SNIR (Signal to Noise Interference Ratio) i.e. calls require a direct flag quality to associate with a FAP/PAP. It is utilized to concede a bring in the framework. The level of flag quality is least at the edge level T1 i.e. it gives higher need to handover calls and there are more odds of brings being given over from the macrocell to FAP/PAP at a higher rate. It has a scope of got flag quality around 8-10 dBm.

CONCLUSION

The proposed model will improve call blocking and call dropping rate. In future we analyze femto and picocells. After analysis these cells are merged to get result.

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